

USAWC STRATEGY RESEARCH PROJECT

US OIL DEPENDENCY--THE NEW WEAPON OF MASS DISRUPTION

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ABSTRACT

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US OIL DEPENDENCY--THE NEW WEAPON OF MASS DISRUPTION

America's economy, American's very way of life, has become dependent on foreign oil. America can reverse its oil dependency over generations, but in terms of days, weeks, or even months America is perilously dependent on the free flow of oil and the energy oil produces. It is reasonable to suggest that America should have a plan to deal with a man-made (9/11) or natural (Katrina) disruption to America's oil needs. Hurricane Katrina suggests that America does not have an emergency energy plan to deal with short-term energy disruption. This paper's focus is America's need for a plan to deal with short-term energy disruption, a proposed plan, and how that plan could be used as a Flexible Deterrent Option.

Assumptions Used Throughout this Paper

There are a few assumptions used throughout this paper to support the author's theory. Some assumptions are simple mathematical equations while others are complex cultural issues. However, none of the assumptions are controversial scientifically. The following assumptions apply to the entire paper: United States oil production can not be dramatically increased above current levels in hours, days, weeks, or even months. Oil production in this paper implies all aspects of getting the oil out of the ground and into the fuel station as a retail product (gas, diesel fuel, jet fuel, etc.). Americans are capable of using less energy. Americans will conserve energy to some degree and for some period of time if they perceive doing so will lessen the negative affects of a national crisis. Americans will conserve energy to some degree and for some period of time if they perceive doing so could be used successfully as an economic weapon against an adversary. Short-term is defined as days, weeks, or months. Intermediate-term is defined as years. Long-term is defined as generations (decades).

An Insatiable Appetite to a Way of Life

The United States of America is the wealthiest country in the world. At the same time, we are being held hostage by our own insatiable appetite for liquid gold—petroleum products. The United States uses more than it can produce. The real issue at hand is that we, as a country, believe that the greatest threat we face is from a so called "dirty bomb," a chemical attack, a nuclear weapon, or 9/11 terrorism. The greatest weapon that faces the United States today is the threat that our appetite for imported oil will not be satisfied. That threat can manifest itself in the form of a foreign dictator, a nation-state, or a non-state actor stopping the flow of oil to America. We live day-to-day in a world where our Middle-Eastern alliances can literally dissolve overnight. We live in a world where a dictator like Hugo Chavez can easily decide to create a

world market crisis. The threat can also manifest itself in the form of a natural disaster. Hurricane Katrina proved the United States is simply not prepared to handle an inventory shortage as well as distribution challenges. We live in a world where the United States cannot control its own destiny.

America's Oil Vulnerability

America's economy, and very way of life, has become dependent on oil. Of greater concern, America is perilously dependent on foreign oil; we consume over twice what we produce. "Oil has become the lifeblood of America's economy. Currently, it supplies more than 40% of our total energy demands and more than 99% of the fuel we use in our cars and trucks."¹ "In 2003, total U.S. demand for petroleum was 20.044 million barrels per day, of which 11.2 million barrels per day, or 56 percent, was from net imports (imports minus exports)."² The need for imported oil leaves the U.S. economy extremely vulnerable to disruptions in world oil production. These facts combined cause America to be extremely vulnerable to any large disruption in oil flow.

These oil flow disruptions can be man-made (1973 Oil Embargo) or acts of nature (Hurricane Katrina). Both fundamental extremists and nature can strike devastating blows to America's oil infrastructure. Regardless of the disruption type, the United States government should have a plan in place to counter large drops in oil supply. One could argue that the United States Government does not have a plan to deal with short term drops in oil supply; Hurricane Katrina highlighted this vulnerability. For the American consumer, Katrina literally took its toll at the gas pump. The following passage is a clear message about disaster preparedness:

Since the beginning of 2005, U.S. retail gasoline prices have been generally increasing, with the average price of regular gasoline rising from \$1.78 per gallon on January 3 to as high as \$3.07 per gallon on September 5, as Hurricane Katrina further tightened gasoline supplies. But the hurricane is only one factor, albeit a dramatic one, which has caused gasoline prices to rise in 2005. A major factor influencing gasoline prices in 2005 was the increase in crude oil prices. The price of West Texas Intermediate (WTI) crude oil, which started the year at about \$42 per barrel, reached \$70 per barrel in early September. Crude oil prices rose throughout 2004 and 2005, as global oil demand increased dramatically, stretching capacity along the entire oil market system, from crude oil production to transportation (tankers and pipelines) to refinery capacity, nearly to its limits. With minimal spare capacity in the face of the potential for significant supply disruptions from numerous sources, oil prices were high throughout 2005. In addition, Hurricane Katrina had a devastating impact on U.S. gasoline markets, initially taking out more than 25 percent of U.S. crude oil production and 10-15 percent of U.S. refinery capacity. On top of that, major oil pipelines that feed the Midwest and the East Coast from the Gulf of Mexico area were shut

down or forced to operate at reduced rates for a significant period. With such a large drop in supply, prices spiked dramatically. Because two pipelines that carry gasoline were down initially, some stations actually ran out of gasoline temporarily. However, once the pipelines were restored to full capacity and some of the refineries were restarted, retail prices began to fall. Increased gasoline imports in the fall of 2005, in part stemming from the International Energy Agency's emergency release, also added downward pressure to gasoline prices. However, retail prices are likely to remain elevated as long as some refineries remain shut down and the U.S. gasoline market continues to stretch supplies to their limit.³

It is clear that the United States Government did not have a good plan to deal with Katrina's oil disruption.

Why Dependence on Foreign Oil is Bad

President George W. Bush, during his 2006 State of the Union address, stated "America is addicted to oil, which is often imported from unstable parts of the world." He went on to say that it was time for the United States to "move beyond a petroleum-based economy and make our dependence on Middle Eastern oil a thing of the past."⁴ Americans realize that our economy is petroleum-based, in so much of everything that is created, built, or transported consumes energy. What Americans may not understand is why importing oil from unstable parts of the world is bad. This addiction has placed the United States in the precarious position whereby it (a) often combats and funds terrorism simultaneously and (b) attempts to spread democracy, but instead enables authoritarian leaders to flourish.⁵

One could easily argue that the United States' current addiction to imported fossil fuel has become its greatest economic and political challenge. Others go even further and contend that in addition to United States domestic policy, U.S. foreign policy is negatively affected by rising oil prices in that the extra proceeds from oil can cause nations to move away from democracy.⁶

Oil supply can be used against the United States as a strategic weapon. The US Government defines Weapons of Mass Destruction (WMD) as Chemical, Biological, Radiological, Nuclear, and High-Yield Explosives (CBRNE).⁷ However, oil flow disruption could have greater economic consequences to the United States than most CBRNE events. Oil-rich nations have long had the ability to disrupt the free flow of oil and they have not been afraid to use disruption as a weapon against the United States.⁸ The United States should prepare for attacks that come in the form of weapons of mass disruption with oil being a most likely candidate. America's military is arguably the strongest in the world, yet an adversary could deliver this great power a devastating blow without ever engaging the military.

Presidential Initiatives

Past presidential energy initiatives have done little to curb America's growing appetite for and dependence on foreign oil. In 1973, the Arab oil embargo caused the price of oil to triple overnight, which resulted in gas lines and large price increases at the pump. During this crisis President Nixon launched "Project Independence" and asserted, "In the last third of this century, our independence will depend on maintaining and achieving self-sufficiency in energy". President Nixon further asserted that Project Independence 1980 is "... set to insure that by the end of this decade, Americans will not have to rely on any source of energy beyond our own." Only two years later in 1975 President Ford pushed the year to achieve energy independence by 1985 when he signed the Energy Policy and Conservation Act to set federal standards for energy efficiency in new cars for the first time.⁹

President Carter saw energy independence as an issue of such vital national interest that he declared it a "moral equivalent of war." In August 1977 he signed the law creating the U.S. Department of Energy to manage America's energy crisis. In July 1979, after the Iranian crisis doubled oil prices, President Carter swore during a nationally televised speech that "beginning this moment, this nation will never use more foreign oil that we did in 1977 – never." President Carter pushed the goal for energy independence out again when he proposed a sweeping \$142 billion plan, which would achieve energy independence by 1990.¹⁰

During the first Gulf War in 1991 President George G.W. Bush proposed a strategy aimed at "reducing our dependence on foreign oil." During his tenure the first President Bush funded the U.S. Advanced Battery Consortium, a \$260 million research project to develop lightweight battery systems for electric powered vehicles. In 1992, President Clinton proposed a large tax on crude oil aimed at reducing America's dependency on foreign oil. In 1993, President Clinton launched the a billion dollar Partnership for New Generation Vehicles with Ford, GM, and Chrysler, aiming to produce a prototype car that was three times more fuel-efficient than conventional vehicles by 2004.¹¹ With the exception of Toyota, automobile manufacturers worldwide mostly wasted this decade-long opportunity to produce alternative energy vehicles.¹²

The current President Bush has also declared America's dependence on foreign oil an issue and during his 2003 State of the Union address he pledged "to promote energy independence for our country." After his 2006 State of the Union address, President Bush stated that we have "an unbelievable opportunity for our country to achieve a great national goal, and that is to end our addiction to oil."¹³

With his 2007 State of the Union address President Bush increased his rhetoric by asking Congress to support his proposal to "... build on the work we've done and reduce gasoline

usage in the United States by 20 percent in the next 10 years.” With that, President Bush proposed mandates to increase the supply of alternative fuels and reform and modernize fuel economy standards for cars by 2017. President Bush also made an indirect request to oil producers to step up domestic production and asked Congress to “double the current capacity of the Strategic Petroleum Reserve.”¹⁴

National Energy Crisis Response Plan

The need for a national energy disruption emergency response plan is clear and present. The success of any national emergency response plan is largely dependent on strong national leadership and American buy-in. National leaders must market the need for this plan and they must convince the American people that such a plan (a) can work and (b) will truly benefit the nation as a whole. Historically, Americans have proven that they can accomplish just about anything. The odds are against America; oil dependent and without a plan, economic disaster is more a question of when, not if. America needs a strategic emergency energy plan to deal with short-term oil disruptions. A national energy disruption emergency response plan is necessary and can work with proper leadership and national buy-in.

The many scenarios that could result in a United States energy crisis include (a) natural disasters, (b) physical attacks on oil production or transportation infrastructure, such as the routine attacks on Iraqi oil pipelines, or (c) oil producing nations flexing their economic muscles. Regardless of the cause, the outcome is fairly predictable – increased fear, increased demand, or reduced supply cause prices to increase. And with futures markets, the price increases take effect immediately, regardless of the on-hand movement of the commodity.

Due to its expansive highway, rail, and electrical infrastructure, energy within the United States is fairly mobile. Liquid fuel can be transported to any location that ships, trucks, trains, or in airplanes within the transportation network. Similarly, electricity can be moved within the electrical infrastructure. Electricity is more restricted to regional grids, but movement within the grids is largely at the discretion of the grid controllers. And it stands to reason that intra-grid maneuverability of electricity could be expanded. The fact that energy is fairly mobile in the United States is likely obvious to most. The fact that energy mobility provides United States strategic leaders with increased flexibility is likely less obvious. Clearly there are obstacles to energy mobility, but likely these obstacles pale in comparison to putting a man on the moon.

National energy mobility affords United States strategic leaders with the ability to manage energy flow by region. Since energy production and transportation in the United States is not directly controlled by the government, leadership from both government and business sectors

have a role to play. Since oil is a strategic commodity, the business leadership of the world's oil producers are strategic leaders. In theory, if the United States East Coast experienced a crisis and needed more energy, energy from other regions of the United States would be diverted to meet this need. Diverting oil or electricity within the existing energy transportation infrastructure is as easy as directing energy companies to do so. In practice, government funding would need to be authorized to compensate private energy firms to build, test, and maintain this energy mobility capability. Assuming that the United States currently has little ability or will to immediately and dramatically increase energy production and refinement, the clear implication is that to accomplish this, the other regions of the United States would have to either (a) produce more energy or (b) use less energy to the degree that energy was diverted to the East Coast.

When a national energy disruption emergency response plan is in place the plan can be executed to counter the negative effects of a natural or man-made energy disruption. That is, whether an act of nature or an act of terrorism, an energy shortage in one region of the United States could be, at least temporarily, counter-balanced by reduced energy consumption in another region of the United States.

A tiered response to oil flow disruptions is viable. The level of response would be commensurate with the level of oil flow disruption. Again, this recommended national energy emergency response plan is all about American's conserving energy in unaffected regions in order to move more energy to the negatively affected region(s). In addition, this plan is intended to deal with short-term energy crises. This plan is not intended to solve intermediate- or long-term oil flow disruptions; therefore the tiered responses are short-term in nature. Each level of response directly corresponds with some level of energy conservation.

Level 1 National Energy Emergency Response Plan

The President declares a national speed limit of 55 miles per hour (mph) and asks American's to conserve where they can. Reducing the national speed limit to 55 mph and changing driving habits could reduce oil consumption by as much as 10% of daily oil requirements.¹⁵ It is reasonable to assume that if the President declared a Level 1 response that American's would, on their own, conserve energy by other means to some degree.

Level 2 National Energy Emergency Response Plan

In addition to Level 1 measures, the President would ask, not direct, American's to conserve energy where they could. It is reasonable to assume that some portion of the population would respond accordingly. This is the first level response whereby the United

States Government would need to consider subsidies to support negatively affected portions of American industry, similar to the temporary airline subsidies immediately following 9/11. Additionally, the United States Government would need to debate what foreign industry, if any, might be temporarily subsidized. Fifty years ago foreign industry was foreign industry; today, some foreign-based industry, such as Honda and Toyota, are so interwoven into the United States economy that they can not be separated without negative effects to America's economy. The foreign industry subsidy debate itself would likely create American strategic leverage, as it would be interpreted as a message to those national or non-national actors involved in a man-made oil disruption.

Level 3 National Energy Emergency Response Plan

Level 1 and 2 measures would be in affect. The President of the United States would ask, not direct, American's to temporarily reduce energy consumption related to recreational activities.

Level 4 National Energy Emergency Response Plan

Level 1-3 measures would be in affect. In addition, the President would declare a national emergency and implement rationing, similar to that required of the American population during World War II.

By the end of 1942, half of U.S automobiles were issued an 'A' sticker which allowed 4 gallons of fuel per week. That sticker was issued to owners whose use of their cars was nonessential. Hand the pump jockey your Mileage Ration Book coupons and cash, and she (yes, female service station attendants because the guys were over there) could sell you three or four gallons a week, no more. For nearly a year, A-stickered cars were not to be driven for pleasure at all. The green 'B' sticker was for driving deemed essential to the war effort; industrial war workers, for example, could purchase eight gallons a week. Red 'C' stickers indicated physicians, ministers, mail carriers and railroad workers. 'T' was for truckers, and the rare 'X' sticker went to members of Congress and other VIPs. Truckers supplying the population with supplies had a T sticker for unlimited amounts of fuel.¹⁶

The Level 4 response would generate national debate. It is reasonable to assume that a Level 4 response could only be maintained so long as the American people perceived that there was a need for that level response.

The above leveled response plan would take time to build. The Department of Homeland Security or the Department of Energy are logical choices to lead the National Energy Emergency Response Plan. The lead organization would be required to write and coordinate the plan. The Legislative Branch would be required to authorize and allocate resources to the

lead organization. But arguably the most difficult task, that of convincing the American people of the need for the plan and leading the American people through the required cultural change, would be the responsibility of the President of the United States.

Oil and America's "Long War"

The Global War on Terrorism (GWOT) has now exceeded the time it took to win World War Two, and there appears to be no end in sight. Although the United States has experienced many tactical victories in this war, strategic success against fundamental extremists and their terror tactics is unlikely to occur without fundamental changes to United States foreign and domestic policy. America's adversaries increasingly recognize that they cannot beat us on the conventional battlefield, so their strategy will continue to rely on unconventional methods. One such method America's adversaries have and will continue to use against her is to take advantage of America's dependence on foreign oil. America's adversaries see this dependence as an opportunity to disrupt the economy thereby giving them a leverage position in strategic negotiations.

America's military can not get the United States out of what decades of failed foreign and domestic policy has gotten them in to. Time and time again presidents have committed to break our reliance on foreign oil and each commitment has failed. It may be time for the United States to open a second front in this global war – a war on foreign oil imports with the incremental change to renewable energy sources. The United States Government, starting with the White House, should lead its nation to conserve energy on a grand scale and a switch from fossil fuel to renewable energy sources.

The President must be concerned with winning the Global War on Terrorism. To win any war, the President must ensure that the will of his people is behind him. To gain the support and will of the American people the President must explain to each and every citizen what they must do to support the war effort. More specifically, the President must explain what behaviors the American people must change to achieve necessary objectives in the prosecution of the war. Without the support and the will of the American people, this war is doomed to fail. The President has not yet engaged one of his office's greatest strengths, which is to leverage the will of the American people behind a cause. During World War II, President Roosevelt directed his citizens to support the war effort by rationing materials. In some cases, certain materials were solely dedicated to the war effort. Similar measures could be taken in the United States today; the most obvious measure is reducing the amount of foreign oil that we import from other countries. Most everything Americans consume requires energy to produce; much of this

energy comes from oil, the majority of which is imported. As a start, the United States President could simply tell the American people that “we must use less energy wherever and whenever you can, and this endeavor will start with me.” By “deliberate role modeling, teaching, and coaching”¹⁷ of the American people, the President’s own visible behavior would have great value in communicating and reinforcing his message to use less energy. Clearly the implication of this second front is a significant internal policy shift for the United States, the affects of which will likely change America’s point of view forever. To win the war on fossil fuel will require each and every American to dramatically reduce their fossil fuel usage until suitable renewable energy sources are in place. This switch to renewable energy will not be easy and will not be without significant sacrifice of current luxuries. This switch to renewable energy will likely have a negative impact on American businesses.

A Culture Change from Energy Consumption to Energy Conservation

Clearly in a capitalist society consumers should and will determine what energy sources to use. However, United States consumers continue to consume the world’s resources at an incredibly high per capita rate and the increased cost of crude oil does not appear to slow consumer demand for energy. One might quickly argue that this is not the military’s mission; although that assertion might have been valid in a pre-9/11 context, war is war and America’s failure to win its war on fossil fuel might lead to America’s failure indeed.

Why the Corporate World Doesn’t Embrace Alternative Fuels

Oil, in America, is controlled by an economic system of capitalism that co-exists with a political system of democracy. Capitalism is “an economic system in which the means of production and distribution are privately or corporately owned and development is proportionate to the accumulation and reinvestment of profits gained in a free market.”¹⁸ Democracy is “government by the people; a form of government in which the supreme power is vested in the people and exercised directly by them or by their elected agents under a free electoral system.”¹⁹ In our system of capitalism, the oil company’s job is to maximize profit for the stockholder. There is no financial incentive, right now, for oil companies to spend their resources in pursuit of alternative energy or clean energy as it comes at “great immediate cost to their bottom line.”²⁰ This is where our government will have to engage to enable change.

The State of California has long led the nation in requiring auto manufacturers to build cars with greater emission controls.

California began to reduce its air pollution in 1955. The Bureau of Air Sanitation set the state's first air quality standards which identified pollution levels that could

endanger the health of some people. Recognizing cars and trucks as a major cause of smog problems, the state formed the Motor Vehicle Pollution Control Board in 1960 to regulate tailpipe emissions. By 1967, a year before emission controls were adopted for cars in the rest of the country, over 1.5 million California cars had been equipped with pollution control technology. In 1968, two years before Congress established the EPA, the two California air quality agencies were combined to create the Air Resources Board (ARB). Since then, in conjunction with county and regional air pollution control agencies, the ARB's program has evolved into one of the most comprehensive air quality efforts in the world.²¹

This is relevant in that it establishes that industry will do (a) what its leadership tells it to do, (b) its shareholders tell it to do, and (b) what government tells it to do. American industry is caught in a predicament whereby what it knows it should do for its shareholders and what it knows it should do to reduce American oil dependency do not match; this is where the United States Government can influence, and at its extreme, direct, the outcome.

Energy Disruption Response Plan Flexible Deterrent Option

The Department of Defense defines the term Flexible Deterrent Option (FDO) as:

(DOD) A planning construct intended to facilitate early decision making by developing a wide range of interrelated responses that begin with deterrent-oriented actions carefully tailored to produce a desired effect. The flexible deterrent option is the means by which the various diplomatic, information, military, and economic deterrent measures available to the President are included in the joint operation planning process.²²

Once America has an energy disruption emergency response plan in place and functioning, the plan could be utilized as a FDO. America buys oil from volatile regions of the world because it has no choice. Currently, Venezuelan President Hugo Chavez can act with a large degree of impunity because American's ability to respond with other pillars of national power have either failed or are not acceptable. Once a national energy disruption emergency response plan is in place, with American's backing, the President of the United States could temporarily reduce Venezuelan oil imports and in short order, put the Venezuelan economy on its knees. It is well within reason that that sort of FDO could be used to put pressure on current national leaders who act negatively towards the United States.

America has the ability to convert its oil dependency weakness into a powerful FDO. But does America have the *will* to change? The United States addiction to oil, most of which is imported, could be converted in to economic leverage, but to do so would require the will of the American people. Could the American people, by agreeing to dramatically cut back on oil consumption, empower the United States President to use oil as an economic weapon?

The United States depends on Venezuelan oil for approximately 11% of its total daily consumption of oil.²³ Recently, Venezuelan President Chavez threatened the United States by stating that it could reduce oil exports to the United States and told Western leaders, including President Bush, “to go to hell”.²⁴ Current U.S. oil dependency empowers Chavez to act negatively toward the United States. The reality, however, is that Venezuela depends heavily on oil exports to the United States. What if the U.S. President could turn the tables and threaten Venezuela with a temporary embargo on Venezuelan oil? Doing so would provide the United States president with an extremely powerful FDO against Venezuela and send a signal to the rest of the world. This FDO could be used to influence governments of a variety of countries.

Oil Demand as a Strategic Weapon

Could America’s oil demand be used as a weapon? Wal-Mart buys millions of filters from Fram each year. Fram’s leverage on Wal-Mart is that Wal-Mart needs to keep its shelves full of Fram product. Wal-Mart’s leverage on Fram is Wal-Mart’s ability to buy filters elsewhere, or decide not to buy oil filters at all. Neither Wal-Mart nor Fram would benefit from any sort of dispute as their relationship is symbiotic. The reality is that each has leverage over the other; the question is who possesses the better leverage position? In the end, the organization that can better, and longer, withstand the economic hardship generally has the better leverage position. Wal-mart could go to a host of other suppliers to fill the gap left by Fram. The negative impact on Fram, on the other hand, could be so devastating that many of its employees would have to be laid off.

The idea of using United States oil importation as an economic weapon against other nations would require the majority of American people to buy in to, and endure the sacrifices that result from, such an idea. Americans must know that by threatening to embargo Venezuelan oil, or imported oil from any other nation, opens a Pandora’s Box in that certain U.S. industries are also threatened, which threatens the stability of the U.S. economy. Literally every consumable product and many services require energy to produce, so using less consumables and services threatens U.S. Companies with lower sales.

Vulnerability to Strategic Leverage Position

The United States is the wealthiest country in the world, yet it is increasingly held hostage by its insatiable appetite for oil, the majority of which must be imported. Much of this imported oil comes from regions of the world that are hostile toward United States interests; oil-rich national leaders have and will continue to use oil against the United States as a weapon of

mass disruption. Equally likely, nature can cause major disruptions to United States energy needs.

Reducing the United States oil vulnerability serves two valuable purposes. First, those who might attempt to take advantage of the United States dependence on imported oil might think twice about using oil as a weapon if the United States has the capability to quickly and dramatically reduce its import requirements on an emergency basis. Second, having a plan in place to quickly and dramatically reduce oil consumption provides our strategic leaders with better options when dealing with natural disasters that negatively effect oil production, refining, and transportation flow within the United States.

The United States must develop a plan to counter these short-term energy disruptions. The plan must leverage (a) American's ability to conserve energy and (b) America's capability to quickly redirect energy from one region of the United States to another. A Katrina or 9/11 type energy disruption in the future is bound to occur. United States leaders must prepare Americans for this eventuality by developing and executing a national energy crisis response plan. The question remains, does America have the will to change?

Endnotes

¹ U.S. Department of Energy Home Page, available from <http://www.energy.gov/energysources/oil.htm>; Internet; accessed 25 September 2006.

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³ *National Petroleum News*, May 2005 and Energy Information Administration, *Petroleum Marketing Monthly* April 2006, Table EN1; available from http://www.eia.doe.gov/pub/oil_gas/petroleum/data_publications/petroleum_marketing_monthly/current/pdf/enote.pdf; Internet; accessed 25 September 2006.

⁴ President George W. Bush, "2006 State of the Union Address," *Vital Speeches of the Day*, 72 (1 February 2006): 226.

⁵ Mr. Kelsey Gonzales, 25-year veteran of Baker Hughes Incorporated, telephone interview by author, 25 January 2007. Baker Hughes Incorporated provides the worldwide oil and natural gas industry products and services for drilling, formation evaluation, completion and production.

⁶ Thomas L. Friedman, "The First Law of Petropolitics," *Foreign Policy* (May/June 2006): 28.

⁷ U.S Department of Homeland Security, "Fact Sheet: A Better Prepared America: A Year in Review," 20 July 2004, linked from *The Department of Homeland Security Home Page* at "Press

Room,” available from http://www.dhs.gov/xnews/releases/press_release_0465.shtm; Internet; accessed 31 January 2007.

⁸ Less than a year before Operation Iraqi Freedom began, Iraq announced a 30-day suspension of oil exports and its plans to go to the Arab League to demand a 6-12 month embargo on all Persian Gulf oil exports to the United States. But by far, the most notable example of oil used as a strategic weapon of mass disruption was the 1973 oil embargo.

⁹ Thomas D. Kraemer, *Carlisle Papers in Security Strategy*, Strategy Research Project (Carlisle Barracks: U.S. Army War College, May 2006), 1.

¹⁰ Ibid.

¹¹ Ibid., 2.

¹² By the time Hurricane Katrina caused at-pump fuel prices to crest \$3 gallon, GM had killed its little-known, but technologically advanced EV1 electric car and all of the Big Three auto manufacturer's 85% Ethanol (E85) capable vehicles were being produced at a trickle. By contrast, while GM was killing its EV1 electric car, Toyota was designing and then mass producing it gasoline/electric Prius Hybrid. “The Toyota Prius is the first mass-produced and marketed hybrid automobile/car. It went on sale in Japan in 1997, and worldwide in 2001. By the end of 2003, nearly 160,000 units had been produced for sale in Japan, Europe, and North America. In Latin, Prius means “before”. The Prius (2000 to 2003 model years) is certified as a Super Ultra Low Emission Vehicle (SULEV) by the California Air Resources Board (CARB). With the 2004 model, the Prius was redesigned as a midsize hatchback and certified as an Advanced Technology Partial zero-emissions vehicle (AT-PZEV).” *Wikipedia Home Page*, available from http://en.wikipedia.org/wiki/Toyota_Prius; Internet; accessed 11 February 2007.

¹³ Kraemer, 2.

¹⁴ The White House, *2007 State of the Union address*, available from <http://www.whitehouse.gov/news/releases/2007/01/print/20070123-2.html>; Internet, accessed 11 February 2007.

¹⁵ Gonzales interview.

¹⁶ *Ames Historical Society*, available from <http://www.ameshistoricalsociety.org>; Internet; accessed 12 March 2007.

¹⁷ Edgar H. Schein, “Deliberate Role Modeling, Teaching, and Coaching,” linked from the *Ted Nellen Home Page* at “Organizational Culture & Leadership,” available from <http://www.tnellen.com/ted/tc/schein.html>; Internet; accessed 14 March 2007.

¹⁸ “Capitalism,” in *Dictionary.com Home Page*, available from <http://dictionary.reference.com/browse/capitalism>; Internet; accessed 31 January 2007.

¹⁹ “Democracy,” in *Dictionary.com Home Page*, available from <http://dictionary.reference.com/browse/democracy>; Internet; accessed 31 January 2007.

²⁰ Gonzales interview.

²¹ *Manufacturers of Emission Controls Association (MECA)*, available from <http://www.meca.org/page.wv?name=Home§ion=root>; Internet; accessed 12 March 2007.

²² “Flexible Deterrent Option” definition, linked from *The Defense Technical Information Center Home Page* at “DOD Dictionary of Military and Associated Terms,” available from <http://www.dtic.mil/doctrine/jel/doddict/data/f/02135.html>; Internet; accessed 14 March 2007.

²³ *U.S. Department of Energy Home Page*, available from http://tonto.eia.doe.gov/dnav/pet/pet_move_impqus_a2_nus_epc0_im0_mbbi_m.htm; Internet; accessed 18 March 2007.

²⁴ Friedman, 28.